

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 91-068
NPDES PERMIT NO. CA0037834

AMENDMENT OF WASTE DISCHARGE REQUIREMENTS, ORDER NO. 88-175

CITY OF PALO ALTO
PALO ALTO WATER QUALITY CONTROL PLANT
PALO ALTO
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter called the Board), finds that:

1. The Board adopted Order No. 88-175 (NPDES permit), reissuing waste discharge requirements for the City of Palo Alto (hereinafter called the discharger) on December 21, 1988. The City discharges tertiary treated effluent from the Water Quality Control Plant into a channel tributary to South San Francisco Bay.
2. The Basin Plan prohibits discharges receiving less than 10:1 minimum initial dilution, discharges to dead-end sloughs, and discharges south of the Dumbarton Bridge. Discharge south of the Dumbarton Bridge is also prohibited by the State Water Resources Control Board's Bays and Estuaries policy.
3. The Basin Plan allows exceptions to the discharge prohibitions using the criteria of net environmental benefit, reclamation, or equivalent protection. Order 88-175 found that Palo Alto's treatment plant effluent supported a finding of net environmental benefit, provided that the discharger conduct special studies addressing salt marsh conversion, development of site-specific water quality objectives and effluent limitations for heavy metals, and ammonia removal.
4. In October, 1990, the State Water Resources Control Board (hereinafter called the State Board) directed the Board to amend Order 88-175's finding of net environmental benefit to an exception based on equivalent protection. The State Board's Order WQ 90-5 found that an exception of equivalent protection could be supported if the discharger was given water quality based interim effluent concentration limits for metals, and revised performance based mass loading limits for metals. This Order amends Order 88-175 to comply with the State Board Order.
5. The 1986 Basin Plan did not establish water quality objectives or effluent limitations for heavy metals in South San Francisco Bay. Instead, the Basin Plan established a process for developing site-specific water quality objectives. In order to control heavy metals discharged to the South Bay during the time that site-specific objectives, and subsequent water quality based effluent limits, were being developed, the Board adopted performance based effluent limits for heavy metals in February, 1990.

State Board Order WQ 90-5 directed the Regional Board to adopt both interim water quality objectives for the South Bay and water quality based effluent limits for the three municipal dischargers.

On April 11, 1991 the State Board adopted water quality objectives for the State in its Bays and Estuaries Plan. Those objectives are applicable to San Francisco Bay below the Dumbarton Bridge.

6. Water quality objectives for both fresh water and salt water exist for the South Bay. The South Bay proper is a saline water body, and is subject to salt water objectives. The Palo Alto treatment plant discharges into a channel that discharges directly into South San Francisco Bay. The area of discharge does not contain any natural creek flows, thus the interim water quality based effluent limits should be based on salt water objectives. Additional information on water quality and impacts on beneficial uses in the discharge area is being collected by the discharger, and will be used to further consider the point of application of objectives at the next permit reissuance. Because water quality objectives are currently being exceeded in South San Francisco Bay, and the discharger has not completed evaluating the toxicity of effluent from its treatment plant, the interim limits in this order do not allow for use of information on effluent dilution supplied by the discharger. That information will be considered at the next permit reissuance, and may result in effluent limits higher than the interim limits in this order.

State Board Order WQ 90-5 recommends that the Board adopt the lower of water quality based effluent limits or the current performance based limits. This Order follows the State Board's guidance on this issue.

7. The information being developed on site-specific objectives will only apply to copper, nickel, lead, and mercury. Effluent limits for arsenic, cadmium, chromium, silver, zinc, and selenium that are contained in this order will be based on existing objectives, and are unlikely to change significantly at the next permit reissuance.
8. When evaluating compliance with the metals concentration limits in this order, the Board will consider the reliability of measures that are in the range of one to five times the detection limit of the analytical method being used. The Board may find non-compliance at values in this range.
9. Past data on metals concentrations in the discharge indicate that violations of some interim concentration limits in this order will be violated. If non-compliance occurs, the Board may issue a Cease and Desist Order containing additional requirements for source control, or in some other way require additional efforts to reduce metals concentrations in effluent from the treatment plant. Targets for metals reductions would be based on effluent limitations. The discharger is currently satisfactorily implementing a source control program, as required by order 90-069. Source control, including waste minimization, is a more desirable pollutant reduction technique than structural modification at the discharger's plant.

10. State Board Order WQ 90-5 directed the Regional Board to amend the performance based mass loading limits. Order WQ 90-5 specifies that the mass loading limits should be calculated by multiplying the 1989 annual mean effluent concentration for each metal by the 1985-1988 annual average flow. This Order amends the mass loading limits as recommended by the State Board.
11. State Board Order WQ 90-5 required the Board to adopt a numerical chronic toxicity limit for effluent discharged to the South Bay. The State Board recommended a limit of one Toxicity Unit. This Order contains a requirement for a Toxicity Reduction Evaluation/Toxicity Identification Evaluation before the next permit reissuance. The Board intends to adopt a chronic toxicity limit at the next permit reissuance.
12. The discharger is constructing a freshwater marsh enhancement project located on the ITT site (in the Palo Alto Baylands), near the treatment plant. Funding for the project was acquired from the California Coastal Conservancy. The project will divert up to 1 million gallons per day of final effluent to create a seasonal 15 acre freshwater marsh that will drain into Matadero Creek. The project will also include construction of an inlet on the south arm of the Palo Alto Harbor to permit salt water inflow into a series of existing sloughs and development of salt marsh habitat on the project site.
13. The marsh will be operated to enhance beneficial uses of reclaimed water, and as such qualifies for Board consideration of an exception to the discharge prohibitions as stated in Finding 2 above. The diversion of 1 mgd of treatment plant effluent to an alternate discharge point does not allow an increase in the 39 mgd capacity of the plant.
14. The Board adopted Resolution 77-1 specifically establishing its Policy regarding the use of wastewater to create, restore, maintain, and enhance marsh lands. The discharger submitted a Marsh Enhancement Plan that outlines operations of the marsh project, future enhancement of the marsh, and a program for protection of rare and endangered species. The discharger will measure metals in the sediment of the marsh before operations begin, and periodically thereafter in waters and sediments. As vegetation and animals in the marsh ecosystem increase, additional studies to monitor the health of the marsh will be considered.
15. Department of Health Services guidelines require that the discharge to the marsh should not exceed a median coliform limit of 23 MPN/100ml to protect public health. The discharge currently meets that requirement.
16. The discharger is hereby notified that the Board will consider amendment of the ITT marsh requirements as necessary to protect other beneficial uses (e.g., aquatic habitat). The consideration of amendments will depend on demonstrated effects of the marsh operations on other beneficial uses of the waters of the state.
17. This action to amend an NPDES Permit is exempt from the provision of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) pursuant to Section 13389 of the California Water Code.

18. The discharger and interested agencies and persons have been notified of the Board's intent to amend waste discharge requirements for the existing discharge and have been provided with the opportunity for a public hearing and the opportunity to submit their written views and recommendations.
19. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the discharger, in order to meet the provisions contained in Division 7 of the Clean Water Code and regulations adopted thereunder and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:

- A. Finding 8 of Order 88-176 shall be amended to read:

Exceptions to the three prohibitions may be considered where the discharger can demonstrate equivalent protection. Equivalent protection can be granted on the grounds that an inordinate burden would be placed on the discharger relative to beneficial uses protected and an equivalent level of environmental protection can be achieved by alternate means. Demonstration of advanced treatment facility reliability is also necessary to grant an exception request. Exceptions can also be granted according to two alternate criteria.

- B. Finding 12 of Order 88-176 shall be amended to read:

The exception request and the Five-Year Water Quality Monitoring Final Report do not support a finding of net environmental benefit and water quality enhancement. However, an exception based on "equivalent protection" can be granted to the discharger if certain conditions are met. In order to demonstrate that discharges to the South Bay provide environmental protection equivalent to discharges north of the Dumbarton Bridge, the discharger must have water quality based effluent limits for toxic pollutants. The discharge must be subject to mass loading limits based on average concentration data, and a chronic toxicity limit. The findings in this order support a finding of equivalent protection.

- C. Finding 13 of Order 88-176 shall be amended to read:

Water quality objectives for South San Francisco Bay exist, and are appropriate to use when developing water quality based effluent limits. The discharger is currently conducting studies which may lead to the development of new site-specific objectives for copper, nickel, lead, and mercury. The Regional Board is also developing Bay-wide objectives for copper and nickel. New proposed objectives for the South Bay, and any subsequent changes in effluent limitations, will be considered at the next permit reissuance. Those proposed objectives, and any subsequent changes in effluent limitations, will be considered at the next permit reissuance.

- D. Finding 14 of Order 88-176 shall be amended to read:

Interim controls on heavy metals are needed because of the limited assimilative capacity of South San Francisco Bay. Interim mass loading limits will be revised and refined as the Board's Waste Load Allocation Modelling Program progresses. Final waste load allocations are unlikely to be available at the next permit reissuance.

- E. Effluent Limitation B.4 shall be amended as follows:

4. Interim Concentration Limits for Toxic Pollutants

- a. Prior to permit expiration, the effluent from the plant and the influent to the ITT Marsh shall not exceed the following limits:

| <u>Constituent</u> | <u>1-day Average (ug/L)^(1,2)</u> | <u>4-day Average (ug/L)^(1,2)</u> | <u>Basis for Limit</u> |
|--------------------|---|---|----------------------------|
| Arsenic | 3.6 | -- | Performance ⁽³⁾ |
| Cadmium | 9.3 | -- | Salt water objective |
| Chromium(IV) | 10 | -- | Performance ⁽³⁾ |
| Copper | 2.9 | -- | Salt water objective |
| Lead | -- | 5.6 | Salt water objective |
| Mercury | 0.025 | -- | Salt water objective |
| Nickel | -- | 8.3 | Salt water objective |
| Silver | 2.3 | -- | Salt water objective |
| Zinc | -- | 86 | Salt water objective |
| Selenium | 2 | -- | Performance ⁽³⁾ |

Notes:

⁽¹⁾ Compliance determinations shall be based on available analyses for the time interval associated with the effluent limitation. When only one sample analysis is available in a specified time interval (e.g., 30-day average or 4-day average), that sample shall serve to characterize the discharge for the entire interval. Weekly 24-hour composite samples will routinely be used to measure compliance. Method detection limits for each metal shall be included in each monthly Self-monitoring Report. The discharger shall use the EPA approved methods from 40 CFR, Part 36, when measuring compliance. The discharger shall use the EPA method with the lowest method detection limit.

⁽²⁾ The discharger shall achieve the following practical quantification levels (PQLs) for effluent analyses:

| <u>Constituent</u> | <u>Maximum PQL (ug/L)</u> |
|--------------------|---------------------------|
| Arsenic | 5 |
| Cadmium | 5 |
| Chromium | 10 |
| Copper | 10 |
| Lead | 5 |

| | |
|----------|----|
| Mercury | 1 |
| Nickel | 10 |
| Silver | 1 |
| Zinc | 50 |
| Selenium | 5 |

The PQL is approximately 5X the method detection limit for metals. The listed PQLs are the maximum allowed for compliance monitoring. The discharger shall, by December 31, 1991, have available PQLs for cadmium, copper, and nickel that are 50% of the currently allowed PQLs. The Regional Board may revise the required PQLs if they conclude that improved analytical methods warrant lower PQLs.

When the effluent limitation is greater than or equal to the PQL, compliance determinations shall be determined based on the effluent limitation and either single or multiple sample analyses.

When the effluent limitation is less than the PQL, compliance determinations based on analysis of a single sample shall only be undertaken if the concentration of the constituent of concern in the sample is greater than or equal to the PQL.

When the effluent limitation is less than the PQL, and recurrent analytical responses between the PQL and the effluent limitation occur, compliance shall be determined by review of data and laboratory bench sheets to determine the method detection limit, and, where appropriate, the statistical significance of these values.

⁽³⁾ Limits based on plant performance during 1989.

F. Provision B.6.a shall be amended as follows:

6. Prior to permit expiration, the effluent mass loadings shall not exceed the following interim limits:

| <u>Constituent</u> | <u>Annual Average (lbs/year)</u> |
|--------------------|--------------------------------------|
| Arsenic | 158 |
| Cadmium | 237 |
| Chromium(VI) | 474 |
| Copper | 1580 |
| Lead | 790 |
| Mercury | 16 |
| Nickel | 948 |
| Silver | 237 |
| Zinc | 5925 |
| Cyanide | 1659 |
| Phenols | 3950 |
| PAHs | 1580 |
| Selenium | 79 |

Notes:

(1) In calculating compliance, the discharger will count all non-detect measures at the detection level. Compliance will be based on annual average loading. Mass loading

should be calculated for each analytical result (calculate loadings weekly using weekly total flow data) and submitted in the monthly and annual Self-Monitoring Reports.

G. The following shall be added to Provision 4.d.:

The discharger shall submit a study plan for a Toxicity Reduction Evaluation/Toxicity Identification Evaluation (TRE/TIE) that is acceptable to the Executive Officer by June 1, 1991. The TIE will be conducted before the next permit reissuance.

H. The Self-Monitoring Program shall be amended to include requirements for monitoring the ITT marsh project contained in Part IV (attached) of this order. After one year of operational data from the marsh is collected, the sampling schedule will be reviewed by Board staff, and may be modified. Any modifications will be subject to Executive Officer approval.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on April 17, 1991.

A handwritten signature in black ink, appearing to read 'Steven R. Ritchie', is written over a horizontal line.

Steven R. Ritchie
Executive Officer

[File No. 2189.8011
Originator: CAN
Reviewer: LS, SAH, TCW]

PART IV. ITT MARSH MONITORING

A. DESCRIPTION OF SAMPLING STATIONS

1. INFLUENT AND EFFLUENT

| Station | Description |
|---------|--|
| E-1 | Located at the marsh discharge point, and consisting entirely of discharge from the marsh. |

2. RECEIVING WATERS AND SEDIMENTS

| | |
|---|--|
| 1-A, 1-B, 1-C, 1-D, 1-E, 2-A, 2-B, 2-C, 2-D, 2-E, 3-A | As specified in Figure A (attached). |
| Matadero Creek | At the point where Matadero Creek passes beneath the Bayshore Freeway. |

B. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be that given in Table 2.

(Part IV, Self-Monitoring Program, ITT Marsh, Order 91-068)

Table 2. Sampling schedule for ITT marsh.

Water Quality Monitoring

| Sampling Station (Figure A) | 1 - B | 2- B | E - 1 | | | | | Matadero Crk. |
|--|---------|--------|-------|------|-------|------|---|---------------|
| Type of Sample | Grab | Grab | Cont. | Grab | 4-day | C-24 | O | 4-day |
| Flow Rate, continuous (mgd) | | | D | | | | | |
| BOD, 5-day 20 C (mg/L) | | | | | | | | |
| Chlorine Residual (mg/L) | | | | | | | | |
| Settleable Matter (ml/L) | | | | | | | | |
| Total Suspended Solids (mg/L) | | | | | | | | |
| Oil and Grease (mg/L) | | | | | | | | |
| Total Coliform (MPN/100mL) | | | | M | | | | |
| Toxicity - 96 hr, flow through % survival) | | | | | | | | |
| Ammonia Nitrogen (mg/L) | W | W | | | | | | |
| Nitrate Nitrogen (mg/L) | | | | | | | | |
| Total Organic Nitrogen (mg/L) | | | | | | | | |
| Total Phosphate (mg/L) | | | | | | | | |
| Turbidity, Nephelometric (NTU) | | | | W | | | | |
| pH (units) | W (1,2) | W(1,2) | | W | | | | |
| Dissolved Oxygen (mg/L) | W(2) | W(2) | | W | | | | |
| Temperature (C) | W(1,2) | W(1,2) | | W | | | | |
| Apparent Color (color units) | | | | | | | | |
| Specific Conductance | | | | M | | | | |
| Sulfides (if DO < 5.0 mg/L) | | | | W | | | | |
| Total and Dissolved (mg/L) | | | | | | | | |

(Part IV, Self Monitoring Program, Table 2 cont., Order 91-068)

| Sampling Station (Figure A) | 1-C B | 2-C B | E - 1 | | | | | Matadero Crk. |
|---|-------|-------|-------|------|-------|------|---|---------------|
| Type of Sample | Grab | Grab | Cont. | Grab | 4-day | C-24 | O | 4-Day |
| Arsenic (ug/L) (5) | | | | | | 2W | | M |
| Cadmium (ug/L) (5) | | | | | | 2W | | M |
| Chromium (ug/L) (5) | | | | | | 2W | | M |
| Copper (ug/L) (5) | | | | | | 2W | | M |
| Cyanide (ug/L) (5) | | | | | | 2W | | M |
| Silver (ug/L) (5) | | | | | | 2W | | M |
| Lead (ug/L) (5) | | | | | | 2W | | M |
| Mercury (ug/L) (5) | | | | | | 2W | | M |
| Nickel (ug/L) (5) | | | | | | 2W | | M |
| Zinc (ug/L) (5) | | | | | | 2W | | M |
| Phenols (ug/L) | | | | | | | | |
| Selenium (ug/L) (5) | | | | | | 2W | | |
| Standard Observations (6) | | | | | | | W | |
| PAHs - EPA Method 610 (ug/L) | | | | | | Y | | |
| Organic and Metallic Priority Pollutants (mg/L) | | | | | | 2Y | | |

TYPES OF SAMPLES

G = grab sample

C-24 = continuous sample (24 hour)

Cont. = continuous sampling

O = observation

SAMPLING FREQUENCY

D = once each day

W = once each week

M = once each month

Q = quarterly, in Mar., June, Sept., and Dec.

2W = every two weeks

3/W = three samples per week

Y = once each year

Footnotes:

- (1) Measures should be made in the the afternoon, when pH and ammonia toxicity are at their maximur
- (2) Measures should be made within an hour of dawn, when dissolved oxygen values are at their lowest levels.
- (3) When 4-day average metals measures exceed the maximim influent values to the marsh, monitoring will be increased to bi-monthly until levels decrease.
- (4) Monthly metals monitoring may be done at either station 1-B or 2- B to fulfill this requirement.
- (5) Method detection limits for marsh samples shall be no greater than those used in testing treatment plant effluent.
- (6) all applicable standard observations, including rainfall

(Part IV, Self-Monitoring Program, ITT Marsh, Table 2 cont., Order 91- 068)

Sediment Monitoring

Transects 1 and 2 (Figure A) shall be sampled for metals and other parameters (1):

1. Prior to filling marsh
2. One month after filling
3. Six months after filling
4. Annually thereafter.

Footnote:

- (1) Arsenic, cadmium, chromium, copper, cyanide, silver, lead, mercury, nickel, zinc, selenium, grain size, and total organic carbon. Sediment samples shall be composited from at least three replicates at each sampling station.

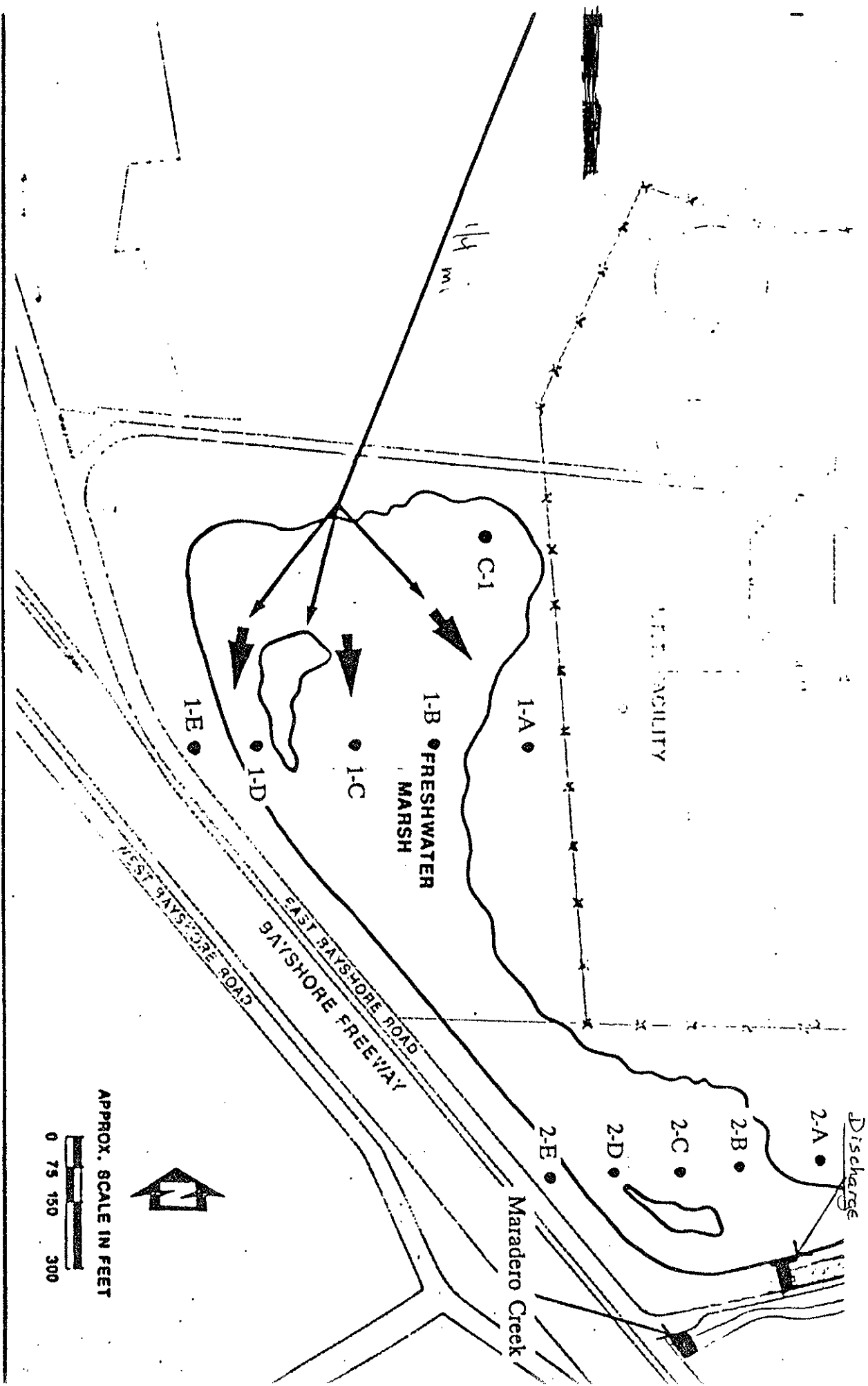


FIGURE A - ITT MARSH SAMPLING SITES

(Part V, Self-Monitoring Program, ITT Marsh, Order 91-)